

Effect of educational strategies on improvement of academic performance of low achievers in first MBBS physiology students

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Abstract

Background: In spite of having high quality in conventional didactic lectures, practical sessions and extra theory classes, low academic performance of some of the students in medical colleges is of great concern. We are entangled with this problem with some of the students of each batch in every academic year. To deal with this situation, we planned to introduce some tools of innovative teaching learning strategies such as small group/team based learning methods. The overall impact of all these innovative strategies on improvement of the academic performance of low achiever students was evaluated and compared with the conventional teaching methods. **Methodology:** The study group consisted of First year MBBS students showing consistently low performance (less than 35%) in weekly topic wise unit tests. Total 30 such students were divided in three groups (10 participants in each group) to practice team based learning as an innovative teaching learning strategy. Important topics from Nerve-Muscle Physiology were chosen. One topic from N-M Physiology was allotted to each team. Prior to class meeting, each team was given sufficient time to do out of class work, as per the SLOs, such as reading and preliminary homework of the topic allotted to them. Then each student of the team underwent Readiness Assurance Process in which students (a) gave a short (10 MCQs) individual readiness assurance test (iRAT), (b) immediately afterwards gave the same test again with members of their team working on single answer sheet (tRAT), (c) then students were given their individual and team RAT scores and asked to make written appeals on any questions that the team missed on the tRAT, (d) the difficulties raised by students were noted by the facilitator. Then students, under supervision of facilitator, performed in class application exercises related to the difficulties they faced during tRAT in the form of group discussion. They were asked to share the outcome of their discussion in front of all the teams. Finally the facilitator briefs out the questions raised by each team. Performance assessment of all the participants involved in this study was done. **Result:** Performance of low achiever students has been statistically significantly improved after undergoing team based learning. **Conclusion:** TBL help not only to improve academic performance but also to have Positive attitudes toward the content, provides confidence in one's social skills and last but not the least it will act as an Opportunity to solve real-world problems.

Key Words: Low achievers, traditional teaching, innovative educational strategies.

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INTRODUCTION

One of the current trends in teaching within curricula in medical schools has been a move away from teacher centred and discipline based curricula to more student centred, integrated clinical application models. Medical Council of India emphasizes upon need based curriculum to ignite student's interest as a drive to learn more. As a part of this, changes to teaching methods being advocated included a reduction in passive learning approaches such as lectures, in favour of more active learning strategies such as small group and team based learning strategies¹.

These innovative teaching learning strategies foster individual and group accountability to answer questions and solve problems. This also enables teachers to develop in the students appropriate scientific skills and attitudes in addition to acquiring knowledge, and to use a learner-centred and activity-based approach in their teaching².

Context Of The Study: Generally the teaching-learning methods used for medical students involve Didactic lectures, Seminar, Tutorials and Practical sessions. All these conventional methods are Teacher centered and discipline based passive methods. In spite of having high quality in conventional didactic lectures, practical sessions and extra theory classes, low academic performance of some of the students in medical colleges is of great concern. We are entangled with this problem with some of the students of each batch in every academic year. To deal with this situation, we planned to introduce some tools of innovative teaching learning strategies such as small group/team based learning methods. The overall impact of all these innovative strategies on improvement of the academic performance of low achiever students was evaluated and compared with the conventional teaching method i.e. the didactic lectures.

Overall Goal

- To improve academic performance of low achievers by implementing innovative T-L methods.
- To create competent and efficient health professionals.

Specific Objectives

- To compare conventional lecture methods with innovative educational strategies such as small group / team based learning methods.
- To assess impact of innovative educational strategies on the academic performance of low achievers of First MBBS Physiology students.

MATERIAL AND METHODS

Permission from the head of the Institute and from the Head of the department was obtained. Institutional ethics committee clearance certificate was obtained. The study was carried out in the Department of physiology, MIMS Medical College, Latur. The study group consisted of First year MBBS students showing consistently low performance in weekly topic wise unit tests conducted in the Dept. of Physiology. Those students who underperform consistently in consecutive four tests were grouped together. We first tried to understand the reasons for their low performance by conducting their separate counseling. Thereby we came to know whether they were having any difficulties regarding understanding of the concepts or any other associated factors. After thorough

counseling they were encouraged and motivated for study. In spite of these efforts, those students showing unsatisfactory performance were called together. Total 30 such students formed the study population. We first explained them about introduction of some additional innovative teaching learning strategies with sole purpose of improving their academic performance. All these students happily agreed because it was going to be something new experience than routine schedule. Likewise consent of these students was taken for participation. The study population was divided in three groups (10 participants in each group) to practice team based learning as an innovative teaching learning strategy to promote collaborative active learning which was more student centered, integrated, elective and systematic one. All the faculty members in the department were actively involved as facilitators. Three collaborative groups were formed. To make team based learning more effective, students were informed the importance of individual accountability, group interaction and equal participation as a critical group success factor. In each of the three teams (10 students in each team), one was a team leader who was supposed to co-ordinate respective team activity. The topics selected for team based learning were already covered in routine theory lectures and these students had shown poor performance in tests conducted on the same topics. Important topics from Nerve-Muscle Physiology were chosen. One topic from N-M Physiology was allotted to each team. Specific learning objectives of these topics were defined as per system wise syllabus decided by MUHS for Human Physiology. Prior to class meeting, each team was given sufficient time to do out of class work, as per the SLOs, such as reading and preliminary homework of the topic allotted to them. Then each student of the team underwent Readiness Assurance Process in which students (a) gave a short (10 MCQs) individual readiness assurance test (iRAT), (b) immediately afterwards gave the same test again with members of their team working on single answer sheet (tRAT), (c) then students were given their individual and team RAT scores and asked to make written appeals on any questions that the team missed on the tRAT, (d) the difficulties raised by students were noted by the facilitator. Then students, under supervision of facilitator, performed in class application exercises related to the difficulties they faced during tRAT in the form of group discussion.³ They were asked to share the outcome of their discussion in front of all the teams. Finally the facilitator briefs out the questions raised by each team. After these educational strategies, performance assessment of all the participants involved in this study was done using written test and viva-voce to evaluate the impact of team based learning and conclusions drawn.

RESULT

Table 1: Comparison of Mean Score of I MBBS students in N-M physiology before and after team based learning

Sr. No.		Before Team Based Learning		After Team Based Learning		't ₂₉ ' value	'p' value	significance
		Mean	SD	Mean	SD			
		1.	Comparison of Score	29.8	6.88			

The above table shows that performance of low achiever students has been statistically significantly improved after undergoing team based learning.

DISCUSSION

Team based learning can be defined as an instructional strategy⁴ that is based on procedures for developing high performance learning teams that can dramatically enhance the quality of student learning in almost any course.⁵ It also transform our traditional content with application and problem solving and interpersonal skills.⁶ Students with low academic performance may benefit more from team based learning.⁷ Planning and managing team based learning activities should be a key part of our instructional design and lesson planning. Team based learning in small groups of students works because it gets students involved at a personal level; it activates their senses and makes use of a wide range of thinking and communication skills. It is an active learning which significantly increases a class's energy level in a way that traditional lecturing does not.⁸ Trotter and Roberts (2006) found that teaching and learning strategies that involve students actively in class are likely to be more successful in enhancing early student experience⁹. According to Johnson, Johnson, and Holubeck (1994), as well as Kagan, small-group learning can bring improvements in areas such as these:

- Tolerance and positive interactions among students from different cultural backgrounds
- The exchange and processing of information
- Academic achievement
- Ownership of new knowledge and skills
- Opportunities to solve real-world problems
- Positive attitudes toward the content
- Openness to new perspectives
- Motivation to learn
- Confidence in one's social skills
- Psychological health (e.g., social development, self esteem)
- Attendance¹⁰

The results of our study shows that performance of low achiever students has been statistically significantly improved after undergoing team based learning. Also in our study the students are judged by examining them stepwise so that they can assure good delivery to society and country.¹¹ Koles PG *et al.* (2010) in their study entitled "The impact of team based learning on medical

students' academic performance" found that TBL enhances mastery of course content. They also concluded that students in the lowest academic quartile may benefit more than highest- quartile students from the TBL strategy¹². TBL uses a fundamentally different knowledge acquisition and knowledge application model. With TBL, students repeat the knowledge acquisition and knowledge application cycle several times within each individual course. They individually study the course content, discuss it with their peers and the instructor, and immediately apply it in making choices that require them to use their knowledge. Thus, students in TBL courses develop a much better sense of the relevance of the material. In most forms of higher education, teachers design their courses by asking themselves what they feel students need to know, then telling the students that information, and finally testing the students on how well they absorbed what they were told. In contrast, designing a TBL course requires instructors to "think backward"—backward because they are planned around what they want students to be able to do when they have finished the course; only then do instructors think about what students need to know¹². This innovative approach to T – L activities will ensure harmonious functioning of educational processes.¹⁴ If the purpose of teaching learning activity is crystal clear to students then it will work in an effective manner.¹⁵ In the mid-1960s, Elementary and secondary teaching was dominated by competitive and individualistic learning¹⁶ which is a need of time in today's era also. As it creates a situation in which two or more people learn or attempt to learn something together.¹⁷ so that knowledge can be created within a population where members actively interact by sharing experiences and take on asymmetry roles.¹⁸ as it involves joint intellectual effort by students or students and teachers by engaging individuals in interdependent learning activities.¹⁹ Students retain more information from thoughtful discussion, and students have a more positive attitude about learning and each other by working together.²⁰ improvement of student engagement and retention of classroom material.²¹ Even discussions lasting as briefly as ten minutes with three participants improved perceived understanding of key concepts and topics.²²

CONCLUSIONS

- Team based learning helps students who seem disinterested in subject material and have difficulty understanding material.
- Team based learning can transform traditional content with application and problem solving skills, while developing interpersonal skills
- If the purpose of teaching learning activity is crystal clear to students then it will work in an effective manner.

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